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June 17, 2005

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: *WRITTEN EX PARTE COMMUNICATION*
Amendment of the Commission's Rules for the License-Exempt 57-64 GHz Band
RM-11104

Dear Ms. Dortch:

On behalf of the Wireless Communications Association International, Inc. ("WCA"), we submit this letter to correct inaccurate and otherwise misleading statements made by SiBeam, Inc. ("SiBeam") in its recent *ex parte* letter regarding WCA's above-referenced Petition for Rulemaking ("Petition").[1]

To review, WCA has asked the Commission to adopt limited and straightforward rule changes that will optimize the license-exempt 57-64 GHz band for very high speed broadband services, without changing Part 15's technical parameters for the spectrum. These rule changes are necessary largely because the Commission's existing power density ("PD") limits in Section 15.255(b)(1) did not anticipate that operators would use the band for high antenna gain point-to-point links that are now capable of delivering multi-gigabit broadband service over distances as long as 1500 meters. The net result is a model of spectrum inefficiency: transmitters using high gain point-to-point antennas in the band are forced to operate at PD levels far below those permitted under the Commission's current RF safety requirements. In turn, this forces vendors to reduce transmit power to levels well below the maximum peak power permitted in Section 15.255(e) of the Commission's Rules (.5 watts, or 27 dBm). To solve the problem, WCA recommended that the Commission add an EIRP limit to Section 15.255(b)(1), such that users of high gain point-to-point antennas at 57-64 GHz will be deemed in compliance with the PD limits

[1] *See Ex Parte* Letter from Tim A. Williams, Ph.D., Chief Executive Officer, SiBeam, Inc., RM-11104 (filed May 31, 2005) ["SiBeam Letter"]

in the rule if they transmit an average EIRP of no more than 82 dBm, with a reduction of 2 dB for every dB that the transmitting antenna gain is below 51 dBi.[2]

WCA also requested that the Commission eliminate ongoing marketplace confusion as to whether Section 15.255(i)'s transmitter identification ("transmitter ID") requirement applies to antennas located indoors but directed outside a window ("window links"). For the reasons already discussed in WCA's Petition, WCA believes it is reasonable to assume that the Commission did not intend to apply the rule to window links, since they effectively pose no greater interference risk than outdoor links.[3]

Prior to SiBase's letter, only Agilent Technologies had opposed WCA's Petition.[4] Agilent's primary concern is the interference impact WCA's proposal may have on low power indoor mobile devices at 57-64 GHz.[5] Thus far, however, Agilent has not submitted a shred of evidence on the interference question, and a close reading of its filings reveals why: Agilent admits that "*there are no active business interests engaged in mobile 60 GHz wireless at present.*"[6] In other words, Agilent is asking the Commission to defer issuance of a *Notice of Proposed Rulemaking* on WCA's Petition to prevent unproven interference to a market that does not yet exist.[7]

SiBase's letter is equally deficient. Like Agilent, SiBase has not submitted any technical studies or other data that support its claim of potential interference to low power mobile devices

[2] *See* Petition for Rulemaking of Wireless Communications Ass'n Int'l, RM-11104, at 5-14 (filed Sept. 30, 2004) ["Petition"].

[3] *Id.* at 14-15.

[4] Agilent's initial volley was a letter from one of its project managers, Rory Van Tuyl. *See* Comments of Rory Van Tuyl, RM-11104 (filed Nov. 29, 2004). In that filing Mr. Van Tuyl acknowledged his association with Agilent but did not indicate that he was acting on Agilent's behalf. It therefore is odd that Agilent advertises Mr. Van Tuyl as "an industry leader commenting on behalf of all potential users of the 60 GHz unlicensed band." *Ex Parte* Letter from Agilent Technologies, RM-11104, at 1 (filed March 18, 2005). Until recently, it was not clear that Mr. Van Tuyl even represented Agilent.

[5] *See id.* at 1-2.

[6] *See id.* at 1 (emphasis added).

[7] Nonetheless, WCA has at its own initiative met with Agilent in good faith to address any concerns it has regarding WCA's proposal. *See Ex Parte* Letter from Wireless Communications Ass'n Int'l, RM-11104 (filed May 23, 2005).

at 57-64 GHz.[8] In fact, there is good reason for the Commission not to take SiBase's complaint at face value. Among other things, existing commercial 57-64 GHz systems typically transmit over less than one-third of the 7 GHz of spectrum in the band, leaving significant bandwidth available for co-located low power applications. This essentially is how users share the 2.4 and 5 GHz license-exempt bands, and they very likely will do the same at 57-64 GHz.

SiBase also incorrectly asserts that WCA's proposed EIRP limit would equate to radiated power "more than 6,000 times higher than current guidelines."[9] In truth, the correct value is a factor of less than 20. Under WCA's proposal, a typical commercial 57-64 GHz system currently limited to a transmit power level of 10mW could increase power to about 160mW – a factor of 16 times. A 6,000-fold increase in PD, on the other hand, would require a 6,000-fold increase in transmit power, or a total transmit power of 60 watts. Obviously, this would far exceed the current 0.5 watt (27dBm) peak transmit power limit in Section 15.255(e)(1), which WCA does *not* propose to change.[10] SiBase's error appears to arise from a misinterpretation of how EIRP relates to PD, and from an implicit (and incorrect) assumption that high gain antennas achieve their gain at distances that are close to the antenna. A four-foot 57-64 GHz antenna, for example, does not achieve its rated antenna gain level until the transmitted signal has traveled 150-200 meters – at that distance, free space signal loss weakens PD to a degree that more than offsets the effects of antenna gain.

Finally, SiBase contends that adoption of WCA's proposal will exacerbate "unintentional splatter" from transmissions directed through windows, and that the Commission therefore should apply its transmitter ID requirement to window links.[11] Again, while SiBase claims that the "splatter" issue "could pose a major interference problem" to the products it is designing, it has given the Commission no clue as to exactly what products it is talking about or how WCA's

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[8] SiBase attacks WCA's assertion that the Commission adopted its current PD limits to promote RF safety. *See* SiBase Letter at 2. The Commission precedent cited in WCA's Petition proves SiBase wrong. *See* Petition at 8, *quoting Amendment of Parts 2, 15 and 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications*, 11 FCC Rcd 4481, 4488 (1995) (Commission finds that PD limits were necessary to "ensure that unlicensed millimeter wave systems comply with relevant RF safety standards") [*"59-64 GHz First Report and Order"*]; *see also 59-64 GHz First Report and Order* at 4499 ("[The 9 uW/cm^2 PD limit] would seem to be a reasonable approach in allowing manufacturers the necessary power density to be able to communicate effectively while generally ensuring that the public would not be exposed to RF fields in excess of the safety standards.").

[9] SiBase Letter at 2.

[10] SiBase misreads WCA's Petition when it states that WCA has asked for "an increase in EIRP limits for unlicensed 57-64 GHz transmitters." SiBase Letter at 1. Indeed, Part 15 specifies no EIRP limit for the 57-64 GHz band and, ironically, license-exempt 57-64 GHz systems with EIRP levels much higher than WCA's proposed limit can comply with the Commission's existing rules.

[11] *See* SiBase Letter at 2.

proposal might affect them. Further, while it is certainly possible that "splatter" from a point-to-point window link may have some interference impact on a lower power device operating on the same frequency, the obvious solution in that case is to operate the two systems on different frequencies within the 57-64 GHz band as discussed above.[12] SiBase's concern thus is difficult to understand – the interference risk it complains of is no different than any garden variety frequency conflict between two mobile systems operating co-channel in the same room, and is the sort of frequency management issue that users of today's indoor wireless LAN systems handle on a routine basis.[13]

In sum, WCA's proposal is not, as SiBase and Agilent suggest, a matter of giving high-gain point-to-point operations priority over low power mobile operations in the 57-64 GHz band. WCA filed its Petition because precisely the opposite is true – the Commission's existing rules were adopted with low gain antennas in mind, and therefore do not provide sufficient opportunity for deployment of high gain antennas capable of delivering very high-speed broadband service over much longer distances than the Commission originally anticipated. WCA believes it has submitted a reasonable good faith solution to the problem, and its proposal has more support than opposition. Accordingly, WCA respectfully submits that the Commission can and should move the process forward by issuing a *Notice of Proposed Rulemaking* on WCA's Petition and soliciting further public comment at that time.

Should there be any questions concerning this submission, please contact the undersigned.

Respectfully submitted,

/s/ Robert D. Primosch
Robert D. Primosch

Counsel to the Wireless Communications Association International, Inc.

cc: Lauren Van Wazer
Karen Rackley
John Reed

[12] It is also possible to easily eliminate "splatter" by placing RF absorbent materials in the reflection path.

[13] SiBase also takes no account of the fact that the signal strength of window links is significantly attenuated, and thus would pose a far less serious interference threat than a co-channel mobile system at the same location. *See, e.g.*, Reply Comments of Wireless Communications Ass'n Int'l, RM-11104, at 4 (filed Dec. 14, 2004).